

# SEQUENCE LISTING

<110> Yunn-Bor Yang  
Chia-Li Wei  
Jyh-Shing Hsu  
Ying-Chieh Tsai

<120> Mutated Penicillin Expandase and Process for Preparing 7-ADCA Using  
the Same

<130> 6653-017-999

<140> To Be Assigned

<141> 2002-03-26

<160> 1

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1230

<212> DNA

<213> Streptomyces clavuligerus

<220>

<221> CDS

<222> (232) ... (1164)

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gcggacgcgc tggacgcgct gacgggagag tgatcccccc ggctcgcgga ccgcctcccc	180
cgcgctgttg accaccgggt tcacggatta cgagaggatc agtgagagtt g atg gac	237
Met Asp	
1	
acg acg gtg ccc acc ttc agc ctg gcc gaa ctc cag cag ggc ctg cac	285
Thr Thr Val Pro Thr Phe Ser Leu Ala Glu Leu Gln Gln Gly Leu His	
5 10 15	
cag gac gag ttc cgc agg tgt ctg agg gac aag ggc ctc ttc tat ctg	333
Gln Asp Glu Phe Arg Arg Cys Leu Arg Asp Lys Gly Leu Phe Tyr Leu	
20 25 30	
acg gac tgc ggt ctg acc gac acc gag ctg aag tcg gcc aag gac atc	381
Thr Asp Cys Gly Leu Thr Asp Thr Glu Leu Lys Ser Ala Lys Asp Ile	
35 40 45 50	
gtc atc gac ttc ttc gag cac ggc agc gag gcg gag aag cgc gcc gtc	429
Val Ile Asp Phe Phe Glu His Gly Ser Glu Ala Glu Lys Arg Ala Val	
55 60 65	
acc tcg ccc gtc ccc acc atg cgc cgc ggc ttc acc ggg ctg gag tcg	477
Thr Ser Pro Val Pro Thr Met Arg Arg Gly Phe Thr Gly Leu Glu Ser	
70 75 80	
gag agc acc gcc cag atc acc aat acc ggc agc tac tcc gac tac tcg	525
Glu Ser Thr Ala Gln Ile Thr Asn Thr Gly Ser Tyr Ser Asp Tyr Ser	
85 90 95	

atg tgc tac tcg atg ggc acc gcg gac aac ctc ttc ccg tcc ggt gac	573
Met Cys Tyr Ser Met Gly Thr Ala Asp Asn Leu Phe Pro Ser Gly Asp	
100 105 110	
ttc gag cgg atc tgg acc cag tac ttc gac cgc cag tac acc gcc tcc	621
Phe Glu Arg Ile Trp Thr Gln Tyr Phe Asp Arg Gln Tyr Thr Ala Ser	
115 120 125 130	
cgc gcg gtc gcc cgg gag gtc ctg cgg gcg acc ggg acc gag ccc gac	669
Arg Ala Val Ala Arg Glu Val Leu Arg Ala Thr Gly Thr Glu Pro Asp	
135 140 145	
ggc ggg gtc gag gcc ttc ctc gac tgc gag ccg ctg ctg cgg ttc cgc	717
Gly Gly Val Glu Ala Phe Leu Asp Cys Glu Pro Leu Leu Arg Phe Arg	
150 155 160	
tac ttc ccg cag gtc ccc gag cac cgc agc gcc gag gag cag ccc ctg	765
Tyr Phe Pro Gln Val Pro Glu His Arg Ser Ala Glu Glu Gln Pro Leu	
165 170 175	
cgg atg gcg ccg cac tac gac ctg tcg atg gtc acc ctc atc cag cag	813
Arg Met Ala Pro His Tyr Asp Leu Ser Met Val Thr Leu Ile Gln Gln	
180 185 190	
aca ccc tgc gcc aac ggc ttc gtc agc ctc cag gcc gag gtc ggc ggc	861
Thr Pro Cys Ala Asn Gly Phe Val Ser Leu Gln Ala Glu Val Gly Gly	
195 200 205 210	
gcg ttc acg gac ctg ccc tac cgt ccg gac gcc gtc ctc gtc ttc tgc	909
Ala Phe Thr Asp Leu Pro Tyr Arg Pro Asp Ala Val Leu Val Phe Cys	
215 220 225	
ggc gcc atc gcg acc ctg gtg acc ggc ggc cag gtc aag gcc ccc cgg	957
Gly Ala Ile Ala Thr Leu Val Thr Gly Gly Gln Val Lys Ala Pro Arg	
230 235 240	
cac cat gtc gcg gcc ccc cgc agg gac cag ata gcg ggc agc agc cgc	1005
His His Val Ala Ala Pro Arg Arg Asp Gln Ile Ala Gly Ser Ser Arg	
245 250 255	
acc tcc agt gtg ttc ttc ctc cgt ccc aac gcg gac ttc acc ttc tcc	1053
Thr Ser Ser Val Phe Phe Leu Arg Pro Asn Ala Asp Phe Thr Phe Ser	
260 265 270	
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Val Pro Leu Ala Arg Glu Cys Gly Phe Asp Val Ser Leu Asp Gly Glu	
275 280 285 290	
acc gcc acg ttc cag gat tgg atc ggg ggc aac tac gtg aac atc cgc	1149
Thr Ala Thr Phe Gln Asp Trp Ile Gly Gly Asn Tyr Val Asn Ile Arg	
295 300 305	
cgc aca tcc aag gca tagagagcac acaccgtcat ggtcacagca gcaatcagtg	1204
Arg Thr Ser Lys Ala	
310	
gtaccgacga gatacgcgcg agggcg	1230